What is claimed is

~~Claims~~

1. A method for operating voice-controlled systems, such as communication and/or two-way intercom devices in motor vehicles, where voice signals and background-noise signals are picked up as total signals by a multiple microphone system (M 1; M 2) and transmitted to at least one loudspeaker (L 1; L 2); the total signal picked up from the specific microphone (M 1; M 2) initially being shifted in frequency by an amount Δ F, and only subsequently being transmitted to the loudspeaker(s) or to the input of a voice-controlled device, characterized in that, in order to eliminate feedback and echo signals, the Δ F-shifted total signal of another, i.e. second microphone, is subtracted from the total signal of a first microphone (M 1; M 2), which is not yet shifted in frequency, and vice versa.

2. The method for operating voice-controlled systems as recited in Claim 1, characterized in that, to acoustically couple or subtract the background-noise signals, an arbitrary acoustic model (AM 1; AM 2) is formed from the picked-up, total signals, and is fed as a signal, between the microphone (M 1; M 2) and the respective frequency-shifting (F 1; F 2), to a respective summation point (S 1; S 2) for subtraction.

3. The method for operating voice-controlled systems as recited in Claim 2, characterized in that the passenger compartment of the vehicle is divided up into at least two acoustic subspaces, in such a manner, that at least one microphone location and at least one loudspeaker location are provided in each subspace; that the aforesaid frequency shift, Δ F, takes place between the microphone location of the one subspace and the loudspeaker location of the other subspace; and that the aforesaid acoustic models (AM 1; AM 2) are used between the loudspeaker locations and microphone locations of the one subspace, and between the loudspeaker locations and microphone locations of the other subspace, so that a signal-based, closed-loop electroacoustical control circuit is formed.

4. The method for operating voice-controlled systems as recited in Claim 3, characterized in that, by means of the aforesaid acoustic models (AM 1; AM 2), not only are voice and/or noise signals of the different passenger-compartment subspaces taken into consideration, but also additionally detected noises in the entire field are considered and subtracted from the total sound signal, so that the voice signal essentially remains.

5. A device for operating voice-controlled systems, such as communication and/or two-way intercom devices in motor vehicles, having a plurality of microphones and loudspeakers, as well as means for transmitting voice messages or voice commands, characterized in that the passenger compartment in the motor vehicle is subdivided into at least two, and if indicated, open subsections (front, rear) having at least one microphone (M1, M2) and at least one loudspeaker (L1, L2); that the aforesaid means also include frequency-shifting devices (F1, F2), which are connected between one of the microphones (M1, M2), respectively, and the respective loudspeaker located in the other subsection (front, rear); and that the respective, resulting loudspeaker signal can be parallelly tapped and, by means of summation points (S1, S2), superimposed in a subtractive manner, over the microphone signal in the same subsection.

6. The device for operating voice-controlled systems as recited in Claim 5, characterized in that means (AM1, AM2) are provided between the parallel tapping of the loudspeaker signal and the respective summation point (S1, S2), the means being used to generate so-called acoustic models, which control and/or postprocess the respective loudspeaker signal; and in that the resulting signal of these means (AM 1; AM 2) is fed to the respective summation point (S 1; S 2).

7. The device for operating voice-controlled systems as recited in Claim 6, characterized in that the acoustic models (AM 1; AM2) include means for detecting sound patterns, the means being used for separating engine and/or driving noises from speech-generated, acoustical signals, as well as being

used for separating primarily speech-generated signals from fed-back, echo signals.